

## **Remarks**

Applicant thanks Examiner Lee for her response. In the Office Action dated July 7<sup>th</sup>, 2005, the Examiner rejected claims 1 - 4 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. U.S. 6,581,719 to Adamson (hereinafter Adamson).

The Applicant agrees with the examiner that Adamson does indicate in col. 2 lines 50-60 that the joining of waveguides derived from the three coordinate systems, Cylindrical, Elliptic Cylinder and Prolate Spheriodal can be done in “an obvious manner”.

In response to the Adamson reference the Applicant has narrowed claim 1 to be precisely the unique combination of an Elliptic Cylinder waveguide directly connected to a Prolate Spheriodal waveguide. In doing so claims 2 and 4 have become obsolete and have been cancelled.

Further to the Adamson reference stated above, the applicant asks the examiner to consider that three waveguides joined together encompasses six different combinations if one considers only two sections and twenty four combinations if one considers three sections. Adamson does not teach what combinations are preferential or even useful as the Applicant does in his application.

The specific joining of the Elliptic Cylinder to the throat followed by the Prolate Spheriodal which is then connected to the mouth represents a unique and useful choice of the multiple possibilities left open by Adamson. Consider the following table of possible connections (for two sections) where “C” represents cylindrical, “EC” represents Elliptic Cylinder, and “PS” represents Prolate Spheriodal.

<b>EC-C</b>	Produces a device which is indistinguishable from <b>EC</b> alone
<b>C-EC</b>	Wavefronts don't match
<b>EC-PS</b>	The current application
<b>PS-EC</b>	Wavefronts don't match
<b>C-PS</b>	Requires a curved source
<b>PS-C</b>	Wavefronts don't match

It can be seen that half of these combinations do not meet the Applicant's criteria for usefulness since the wavefronts at the mating plane between the two waveguides don't match each other. This mismatch causes diffraction, which, as pointed out in the Specification (pg 2, para 2) is undesirable. The **C** waveguide connected onto an **EC** waveguide produces no new useful configuration since the **EC** coordinates become **C** coordinates at the mouth – the two coordinate waveguides differ only at the throat. Hence, it can be seen that only when the **PS** waveguide is chosen as the second or radiating waveguide does one achieve a useful result.

Of the two waveguides where **PS** is the second section, the waveguide with **C** first requires a source which has a cylindrical wavefront (the throat wavefront) – a non-existent output configuration from a compression driver source. However, the unique combination of **EC** followed by **PS** produces a waveguide which allows a flat wavefront as its input, as found in nearly all compression drivers, and produces a spherical wavefront at the mouth as is desired. Thus, of the six fundamental combinations (only the two section situation being considered) only one is actually of any use. This certainly is not an "obvious" situation as claimed by Adamson and is most certainly not taught by Adamson. One of ordinary skill in the art would not have seen this fact as obvious without the in depth investigation that the Applicant has indeed performed leading up to his application.

Two further points should be made for the record. First, the Applicant is fully aware that the joining of **EC** and the **PS** coordinate waveguides is not exact. Namely, there is a small mismatch between the wavefronts of these two coordinate surfaces. With proper design (an **EC** section that is neither too long nor too short), this mismatch can be minimized and made to be insignificant.

Second, the throat of an **EC** waveguide is rectangular in cross section while the current genres of compression driver sources have exit apertures that are round. It was anticipated by the Applicant that the "substantially Elliptic Cylinder" reference in the claim encompasses the situation where the cross sectional area of the throat of the waveguide changes slowly from round to square - this transition maintaining the same cross sectional area that would have occurred had the throat always been rectangular.

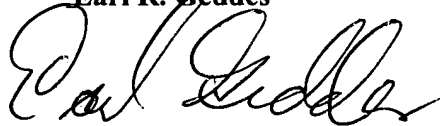
Consequently, in view of these remarks, Applicant respectfully contends that the rejections made by the examiner have been fully replied to and traversed, and that the application is in condition for allowance. The Examiner is respectfully requested to pass this case to issue. No fee is believed to be due for the filing of this paper.

Finally the drawings have been amended so as to show the correct order of the Elliptic Cylinder and Prolate Spheroidal sections as they were inadvertently labeled incorrectly.

The Examiner is requested to telephone the undersigned to discuss prompt resolution of any remaining issues necessary to place this case in condition for allowance.

Respectfully submitted,

**Earl R. Geddes**

A handwritten signature in black ink, appearing to read 'Earl R. Geddes', written in a cursive style.

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